

IN THE CLAIMS:

Please cancel claims 5 and 18 without prejudice and amend claims 1, 6, 7, 8, 9, 11, 12, 13 and 17 as follows:

1. (currently amended) A solid state p-n heterojunction comprising an electron conductor consisting of a n-type semiconductor in the solid state and, a hole conductor p-type semiconductor and of further comprising a sensitizing semiconductor, said sensitizing semiconductor being located at an interface between said electron conductor n-type semiconductor and said hole conductor p-type semiconductor, characterised in that said hole conductor p-type semiconductor is being in the solid state, in that said sensitizing semiconductor is in a form consisting of individual particles adsorbed at the surface of said electron conductor n-type semiconductor, said individual particles being quantum dots and in that said p-n heterojunction comprises, with a plurality of individual point-contact heterojunctions junctions between said quantum dots and said electron conductor n-type semiconductor on one hand and said quantum dots and said hole conductor p-type semiconductor on the other hand.

5. (canceled)

6. (currently amended) A heterojunction as claimed in claim 5 1, characterised in that said n-type semiconductor is a ceramic made of finely divided large band gap metal oxide.

7. (currently amended) A heterojunction as claimed in claim 1, characterised in that said ~~electron conductor n-type~~ semiconductor is nanocrystalline TiO_2 .

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cont

8. (currently amended) A heterojunction as claimed in claim 1, characterised in that said ~~hole conductor p-type~~ semiconductor is an inorganic hole transporting solid compound.

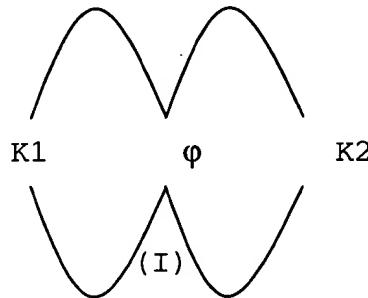
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9. (currently amended) A heterojunction as claimed in claim 1, characterised in that said ~~hole conductor p-type~~ semiconductor is an amorphous reversibly oxydisable organic or organometallic compound.

10. A heterojunction as claimed in claim 1, characterised in that said hole conductor is a polymer.

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11. (currently amended) A heterojunction as claimed in claim 1, characterised in that said ~~hole conductor p-type~~ semiconductor is selected from the group consisting of Spiro and Heterospirocompounds of general formula (I),



wherein ϕ is one of C, Si, Ge or Sn, and K1 and K2 are independently one from the other conjugated systems.

12. (currently amended) A heterojunction as claimed in claim 11, wherein said ~~hole conductor~~ p-type semiconductor is OMeTAD.

13. (currently amended) A heterojunction as claimed in claim 4 1, wherein said quantum dots are particles consisting of PbS, CdS, Bi₂S₃, Sb₂S₃, Ag₂S, InAs, InP, CdTe, CdSe or HgTe or solid solutions of HgTe/CdTe or HgSe/CdSe.

14. A solid state sensitized photovoltaic cell comprising a solid state p-n heterojunction as claimed in claim 1.

15. A cell as claimed in claim 14, characterised in that it comprises

a transparent first electrode,
a said solid state p-n heterojunction and
a second electrode.

16. A cell as claimed in claim 15, further comprising a dense semiconductive layer between said first electrode and said solid state p-n heterojunction.

17. (currently amended) A cell as claimed in claim 14, characterised in that said solid state p-n heterojunction is obtained by forming quantum dots on the surface of said ~~electron conductor~~ n-type semiconductor by at least more than one deposition treatment and less than 10 deposition treatments, before providing said ~~hole conductor~~ p-type semiconductor to said layered heterojunction.

18. (canceled) ✓

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